WHAT IS CLAIMED IS:

1. A method for the volumetric distribution of a pharmaceutical agent in the tissue of a living vertebrate host, said method comprising:

positioning a needle through the wall of a target blood vessel so that an aperture of the needle is positioned beyond an external elastic lamina (EEL) of the wall by a distance not exceeding 5 mm; and

delivering an amount of the pharmaceutical agent from the aperture so that the agent distributes both longitudinally and radially from the injection site.

2. A method as set in claim 1, wherein the agent distributes longitudinally along the blood vessel over a distance of at least 1 cm and radially by a distance of at least 1 cm or within a time period no greater than 60 minutes.

3. A method as in claim 2, wherein the concentrations of agent at all locations spaced at least 2 cm from the delivery site are at least 10% of the concentration at the delivery site.

4. A method as in claim 1, wherein the agent distributes via the lymphatic system surrounding the target.

5. A method as in claim 1, wherein the aperture of the needle is positioned at a distance less than 5 mm beyond the EEL .

6. A method as in claim 5, wherein pharmaceutical agent comprises a small molecule drug, a protein, or a gene.

7. A method as in claim 6, wherein the agent has a maximum dimension of 200 nm or below.

8. A method as in claim 1, wherein the blood vessel is a coronary blood vessel.

9. A method as in claim 6 , wherein the coronary blood vessel is an artery.

10. A method as in claim 7, wherein the coronary artery is at risk of hyperplasia.

11. A method as in claim 7, wherein the coronary artery has regions of vulnerable plaque.

12. A method as in claim 1, wherein the patient is suffering from congestive heart failure or a cardiac arrhythmia.

13. A method as in claim 1, wherein the blood vessel is a cerebral blood vessel and the tissue is in the brain of the host.

14. A method as in claim 1, wherein the blood vessel is a hepatic blood vessel and the tissue is in the liver of the host.

15. A method as in claim 1, wherein the agent is being delivered to treat a neoplastic disease in the tissue.

16. A method as in claim 1, further comprising:

confirming that the aperture is positioned beyond the EEL before delivering the amount of pharmaceutical agent.

17. An improved method for injecting a pharmaceutical agent into the tissue of a living host using a needle positioned from a lumen of a blood vessel, wherein the improvement comprises positioning the needle outwardly from the blood vessel lumen and confirming that a delivery aperture of the needle has penetrated into tissue beyond an external elastic lamina (EEL) of the blood vessel before injecting the pharmaceutical agent.

18. An improved method as in claim 17, wherein confirming comprises injecting contrast media through the needle aperture and observing distribution of the media.

19. An improved method as in claim 17, wherein confirming comprises monitoring injection pressure.

20. An improved method as in claim 17, wherein confirming comprises monitoring temperature near the delivery aperture.

21. An improved method as in claim 17, wherein confirming comprises monitoring pH near he delivery aperture.

22. An improved method as in claim 17, wherein confirming comprises monitoring electrical impedance near the delivery aperture.

23. An improved method as in claim 17, wherein confirming comprises monitoring insertion force while positioning the needle through the EEL.

24. A catheter comprising:

a catheter body;

a needle having an aperture and being deployable from the catheter body; and

means coupled to the needle for detecting when the aperture of the needle has advanced beyond the external elastic lamina of the blood vessel.

25. A catheter as in claim 24, wherein the detecting means comprises a temperature sensor attached to the needle near the aperture.

26. A catheter as in claim 24, wherein the detecting means comprises an electrical impedance sensor attached to the needle near the aperture.

27. A catheter as in claim 24, wherein the detecting means comprises a pH sensor attached to the needle near the aperture.

28. A catheter as in claim 24, wherein the detecting means comprises an insertion force sensor coupled to the needle.

29. A kit for delivering a pharmaceutical agent to a patient suffering from or at risk of vascular disease, said kit comprising:

a catheter having a needle which can be advanced from a blood vessel lumen through a wall of the blood vessel to position an aperture of the needle beyond an external elastic lamina (EEL) of the wall by a distance not exceeding 5 mm; and

instructions for use setting forth a method comprising:

positioning the needle through the wall of the target blood vessel so that the aperture of the needle is positioned beyond the external elastic lamina (EEL) of the wall by a distance not exceeding 5 mm; and

delivering an amount of the pharmaceutical agent from the aperture so that the agent distributes both longitudinally and radially from the injection site.